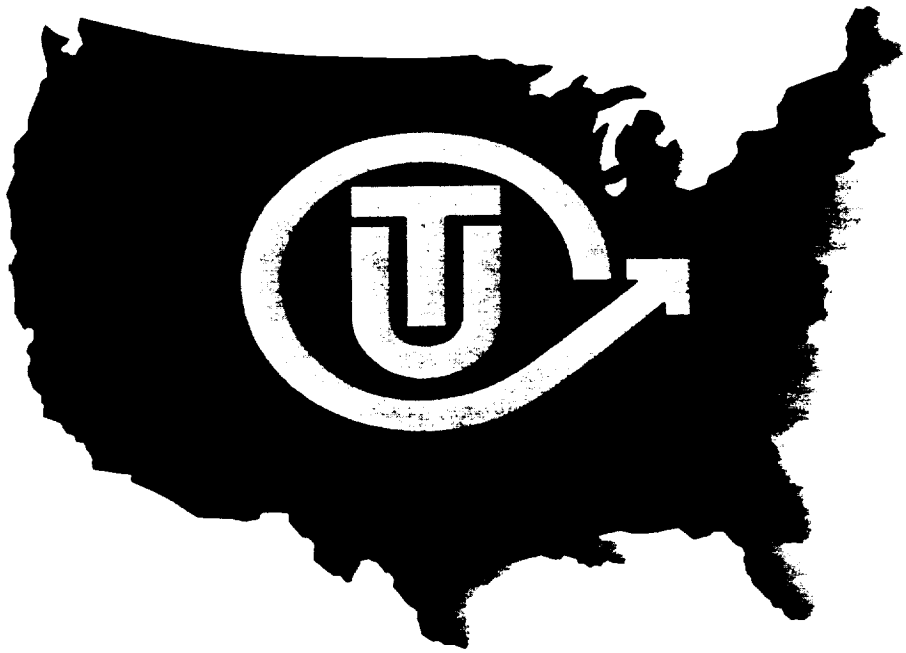
NASA
National Aeronautics and Space Administration

NASA-CR-195967

Technology Utilization Network System [TUNS]

P- 42



Project Master Plan

Prepared: October 17, 1986

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(NASA-CR-195967) TECHNOLOGY UTILIZATION NETWORK SYSTEM (TUNS): PROJECT MASTER PLAN (Information Systems and Networks Corp.) 42 p

TECHNOLOGY UTILIZATION NETWORK SYSTEM (TUNS)

PROJECT MASTER PLAN (PMP)

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APPROVAL SIGNATURE PAGE

INITIAL APPROVAL TUNS PROJECT MASTER PLAN (PMP):

VERSION	SIGNATURE/TITLE	DATE
1.0	HENRY CLARKS/TU DIV. DIR.	10/22/84

REVISIONS:

VERSION	SIGNATURE/TITLE	DATE
1.0	ROYAL BIVINS/TUNS PROG.MGR.	

SECTION 1.0
INTRODUCTION

1.1 BACKGROUND/PROBLEMS

For over 22 years the Technology Utilization (TU) Program has been in the business of acquiring and disseminating NASA technology to the public and industrial sectors. Very little automation has been introduced to the process during this time. Currently, the following major TU Program problems exist:

- o MINIMUM PROGRAM STAFFING LEVEL
- o INSUFFICIENT GROWTH IN NEW TECHNOLOGY ACQUISITION/REPORTING
- o EXCESSIVE LAG TIME BETWEEN NTR ACQUISITION & DISSEMINATION
- o LACK OF UNIFORM REPORTING PROCEDURES
- o LACK OF UNIFORM ADEQUATE PROGRAM ORIENTATION/TRAINING
- o INSUFFICIENT AUTOMATION
- o INCONSISTENCIES OF HARDWARE AND SOFTWARE
- o INADEQUATE COMMUNICATIONS/NETWORK LINKAGES

The proposed Technology Utilization Network System (TUNS) system development will focus on these problems in order to implement an appropriate system solution.

1.2 SYSTEM OVERVIEW

The Technology Utilization Network System (TUNS) is to be developed by the NASA Headquarters Technology Utilization Division, Code IU. TUNS will provide the benefits of current office automation technology in the capture, evaluation, and dissemination activities of technology transfer. TUNS will include PCs at each TU-related office, one central computer, and networking which connects the central computer and all of the PCs. Each location will have a variety of software packages (both off-the-shelf and custom designed) to meet the needs of users at that site. Each PC will be able to operate

independently, connected to a local network, and/or as a work station connected to the central computer facility. Communications facilities will be available to allow each PC to transmit and receive data as necessary (such as the transmittal of NTR's, management reports, budget data, etc.).

The network of personal computer professional work stations will be provided with uniform automation tools to assist the TU program members in the following major work functions:

- o OFFICE ADMINISTRATION
- o NEW TECHNOLOGY ACQUISITION
- o INDUSTRIAL APPLICATIONS CENTER CUSTOMER SUPPORT
- o TU PROGRAM/PROJECT MANAGEMENT
- o ONLINE TRAINING
- o AUTOMATION SYSTEM ADMINISTRATION

TUNS software will allow for quicker, more uniform, and efficient information gathering for all aspects of contract administration, new technology reporting, and other technology transfer activities. It will provide software for NTR clause administration, contract correspondence, NTR tracking, awards administration, and general office automation to the TU Offices. TUNS will also provide software for use by the Industrial Applications Centers (IACs) and others involved in technology transfer. This will include software to assist in the preparation and submittal of marketing plans, cost proposal preparation, customer support, and general office automation.

Another feature to be provided by TUNS is an automated orientation and training facility. This facility will provide PC-based training in the use of the off-the-shelf and custom developed TUNS software, as well as TU orientation for contract technical representatives and others in their duties as related to TU.

The capabilities provided by TUNS are expected to assist most, if not all, of the personnel involved in technology transfer. Capabilities are envisioned to assist the following users in their day-to-day activities:

- o TU COORDINATORS
- o TU OFFICERS
- o TU OFFICE STAFF
- o TECHNOLOGY COUNSELORS
- o INDUSTRIAL APPLICATIONS CENTER (IAC) DIRECTORS
- o IAC STAFF
- O CENTERS FOR COMMERCIALIZATION OF SPACE (CCDS)
- o HEADQUARTERS TU STAFF

In addition to the users outlined above, applications are also envisioned to provide support for the following sets of users:

- o TECH BRIEF EVALUATION CONTRACTOR
- o TECH BRIEF PREPARATION CONTRACTOR
- o STI FACILITY CONTRACTOR
- o TU SUPPORT CONTRACTORS
- o CCDS MARKETING CONTRACTOR

The various TUNS users have different needs. Each location will receive those software packages needed by the users at that site. All users will receive the general office automation packages which include calendars, TU Bulletin Board, TU Mail, several online directories, online "notepads", conferencing, word processing, spreadsheet, and graphics. These capabilities will improve overall office functioning and efficiency.

The system will be developed in two phases over the next two years by a development team consisting of the following major groups:

- o NASA HEADQUARTERS CODE IU PROGRAM/PROJECT MGT.
- o SYSTEM DEVELOPMENT CONTRACTOR (INFORMATION SYSTEMS & NETWORKS CORPORATION -ISN)
- o USERS WORKING GROUP
- o COMPUTER/NETWORK SUPPORT FACILITIES INTERFACE GROUP

Phase I will concentrate on automating the NEW TECHNOLOGY ACQUISITION, some OFFICE AUTOMATION and some ONLINE TRAINING functions. It will be primarily a stand-alone work station based system. Electronic mail service will also be provided under Phase I.

Phase II will concentrate on automating the IAC, CCDS interface and other remaining functions, including the centrally maintained database information and full network capability.

1.3 OBJECTIVES OF THE PROJECT

The major objective of the TUNS system development is to INCREASE NEW TECHNOLOGY DISSEMINATION/TRANSFER. This will be accomplished through the marriage of system features/functions to objectives. Through implementation of the following sub-objectives the major objective can be accomplished.

- INCREASE NEW TECHNOLOGY ACQUISITION
  - ONLINE ENTRY OF NTR REPORTING FORMS/DOCUMENTS
  - AUTOMATIC CORRESPONDENCE GENERATION
  - UNIFORM TRACKING AND REPORTING TOOLS

- DECREASE TIME BETWEEN NTR ACQUISITION/DISSEMINATION
  - ELECTRONIC XMIT BETWEEN TU PROGRAM MEMBERS
  - UNIFORM EVALUATION PROCESSING AND PROCEDURES

- INCREASE COMMUNICATIONS BETWEEN TU PROGRAM MEMBERS
  - ONLINE DIRECTORIES
  - ELECTRONIC MAIL
  - ELECTRONIC BULLETIN BOARD
  - PROBLEM REFERRAL SYSTEM
  - ELECTRONIC CONFERENCING

- INCREASE THE EFFECTIVENESS OF PROGRAM/PROJECT MANAGEMENT
  - APPLICATIONS PROJECT MANAGEMENT TOOLS
  - BUDGET GENERATION TOOLS
  - AUTOMATIC GENERATION OF HEADQUARTERS REPORTING
  - AUTOMATIC GENERATION OF TUO/IAC REPORTING

- o INCREASE THE EFFICIENCY OF GENERAL TU ADMINISTRATION
  - o UNIFORM OFFICE AUTOMATION TOOLS

- o PROVIDE ADEQUATE PROGRAM ORIENTATION/TRAINING
  - o ONLINE TU PROGRAM TEAM ORIENTATION
  - o ONLINE PROGRAM POLICIES/PROCEDURES/STANDARDS
  - o ONLINE TUO/IAC CUSTOMER SUPPORT ORIENTATION
  - o ONLINE TUNS/OFFICE AUTOMATION TRAINING

1.4 OBJECTIVE OF THE PROJECT MASTER PLAN

The objective of the Project Master Plan is to communicate to all members of the project development team specific approved guidelines concerning system overview, project organization, staff responsibilities, detailed tasking and time phasing, resources requirements, documentation requirements and project management and control requirements. The PMP will be an official document initially approved by the Director Technology Utilization Division. Upon initial approval of the PMP the document will be distributed to all members of the TUNS development team. Updates to the document will be approved by the TUNS Program Manger.

1.5 SYSTEM HARDWARE/SOFTWARE DESIGN GOALS

The TUNS system hardware and software key design goals are as follows:

- o HARDWARE DESIGN GOALS
  - IBM PC/AT OR COMPATIBLE
  - CENTRAL PROCESSOR CAPABILITY
  - NETWORKING CAPABILITY
  - CONFIGURATION FLEXIBILITY (SMALL/LARGE OFFICE)

- o SOFTWARE DESIGN GOALS
  - MAXIMUM USE OF OFF-THE-SHELF OA SOFTWARE
  - FLEXIBLE DBMS
  - MENU DRIVEN
  - PASSWORD PROTECTED
  - MODULAR ACCESS
  - ONLINE HELP/TRAINING

1.6 SITE LOCATIONS

A minimum of one TUNS work station will be located at the following sites:

NASA Headquarters-
(3) Technology Utilization Division Code IU

TUOs-
(9) ARC, GSFC, JSC, KSC, LaRC, LeRC, MSFC, JPL, NSTL

IACs-
(10) IND, COSMIC, OKLA, PITT, CONN, NC, NM, USC, FLA, KY

CCDSs-
(9) BATTELLE COLUMBUS LAB., U. ALABAMA-BIRM., U. ALABAMA-HUSTS, INST.FOR TECH.DEV., VANDERBILT U., CLARKSON U., OHIO STATE U., U. WISCONSIN, U. HOUSTON

SUPPORT CONTRACTORS-
(7) STIF, ISN, LTS, ABP, WT CHEN, BOEING, SRI

TU COUNSELORS-
(6) ARC, LeRC, GSFC, others

TU COORDINATORS (REPS IN CENTER TECHNICAL DIVISIONS)-
(10-20/CTR = average 135)-

POTENTIAL TOTAL MINIMUM WORKSTATIONS(1 PER OFC.) = (180)

SECTION 2.0
SYSTEM CONCEPT DEMONSTRATION MODEL

2.1 OBJECTIVES OF THE MODEL

In order to be more effective in designing a new system, a system concept demonstration model was constructed and has been demonstrated at the September 22-24, 1986 TU family Conference. The purpose and basis of the model was as follows:

- o TO PRESENT SYSTEM AUTOMATION CONCEPT AND STIMULATE USER IDEAS
- o TO BE USED AS A STARTING POINT FOR FORMAL SYSTEM DEVELOPMENT
- o INITIAL EMPHASIS ON NEW TECHNOLOGY REPORTING/OFFICE AUTOMATION/ONLINE TRAINING

- o DEMONSTRATION MODEL SOFTWARE BASED ON:
  - o CHAPMAN NTR STUDY
  - o CTA AUTOMATION TU STYTEM REQTRS/ARCHITECTURE
  - o TUO/IAC DISCUSSIONS/EXISTING PC SOFTWARE
  - o LLNL/STIF SYSTEM SOFTWARE
  - o "OFF-THE -SHELF" OFFICE AUTOMATION SOFTWARE
  - o OTHER TU STUDIES
- o DEMO MENUS AND FORMATS/REPORTS NOT SET IN CONCRETE (ONLY SAMPLES)
- o WANT AND NEED HELP FROM USER COMMUNITY TO DESIGN AND IMPLEMENT SUCCESSFUL SYSTEM

2.2 MODEL SYSTEM CONFIGURATION

ISN has developed a concept demonstration model which has been implemented on an IBM/AT compatible Compaq 286 using Dbase III Plus software (a database management package), Word Perfect (a word processing package), a BASIC interpreter (to facilitate communication between packages), Sidekick (to provide calendars and notepads), Lotus 123 (for spreadsheets) and Smartcom (as a communications package) for menu and program development. Using IBM Story Board Software the model was presented to the TU Program Members at the September 22-24, 1986 TU family conference. Solicitation of initial comments

and ideas will be accomplished by distributing a diskette of the story board presentation and hard copy of the system concept model information to all TU member organizations. This will allow for hands-on review of the concept information. An evaluation form has been provided as part of the documentation. Initial evaluation comments on the concept model are due back to the project by October 20th.

2.3 INFORMATION GAINED FROM THE MODEL

The system concept demonstration model shows that a TUNS system can be developed based on off-the-shelf office automation software. However, because of the complexity involved in the NTR process (requiring graphics, telecommunications, etc.), there is a requirement for sophisticated systems integration to tie all of the packages together into a coherent system.

The development of the demonstration model has highlighted the need for additional requirements definition by the user community, particularly in the areas of management reporting and IAC customer support.

Technically, the demonstration model has indicated the need for a careful selection of the database package to be used in TUNS. The database package should provide an interface to a compiled programming language. This is required not only due to speed demands, but also to reduce the memory conflicts created by interpreters and resident software (such as Sidekick).

Using the concept model information, the initial evaluation comment forms and input from the Users Working Group (UWG), ISN will draft a "STRAWMAN" Functional Requirements Document (FRD). An initial UWG meeting will be held in mid November of this year to initiate UWG activity.

SECTION 3.0
SYSTEM DEVELOPMENT TEAM

3.1 PROJECT ORGANIZATION

Functionally, the TUNS Project is organized into five major operational components. These components each provide vital information and/or resources for the successsful completion of the project. The functions and the organization assigned responsibility are listed below:

- Policy Decisions, Funding and Program/Project Management (Nasa Headquarters Technology Utilization Division)

- Functional Requirements Definition and Specification Review (TUNS User Working Group - TUOs, IACs and support contractors)

- System Specification, Development, Implementation and Training (Information Systems and Networks Corp.)

- Policy Articulation and Orientation Materials Definition (W. T. Chen Corporation)

- Central Computer Facility Management and Coordination (To Be Determined)

Figure 1.0, TUNS Project Organization Chart, illustrates the interrelationship and hierarchy of the functional groups.

The names of the individuals currently available are included on the chart. Other personnel will be added as necessary to fully staff the project.

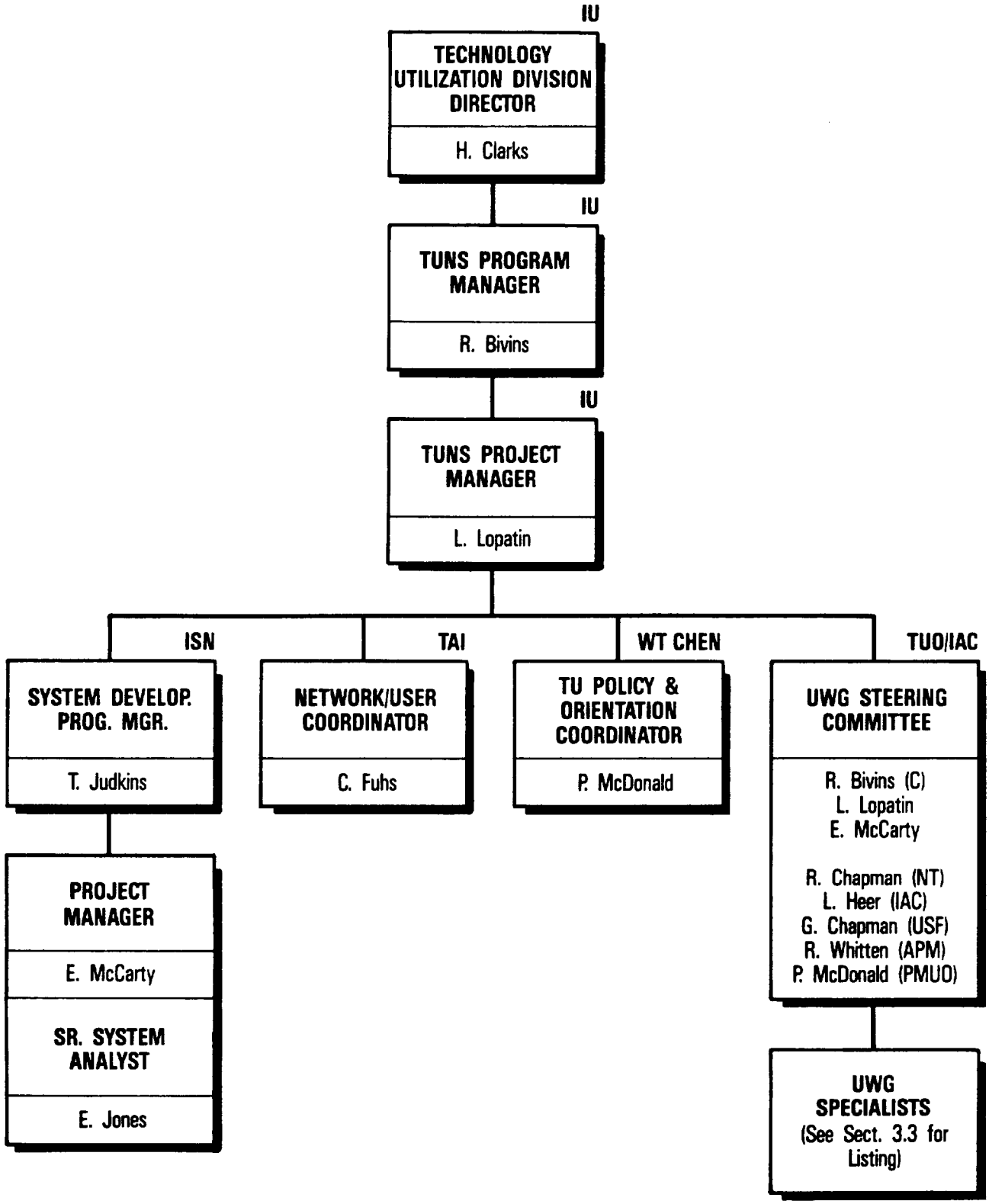

FIGURE 1. TUNS Project Organization Chart

3.2 RESPONSIBILITIES BY ORGANIZATION

TECHNOLOGY UTILIZATION DIVISION DIRECTOR- The TU Division Director will approve the initial Project Master Plan (PMP) and insure that adequate funding and other resources are made available for successful completion of the TUNS project.

TUNS PROGRAM MANAGER- The TUNS Program Manager will approve all changes to the initial PMP. He will be responsible for overall project development policy, coordination and direction. He will be chairman of the User Working Group Steering Committee. He will be responsible for directing the TUNS Project Manager. He will be responsible for providing input to the Office of Commercialization (Code I) monthly Program Status Review (PSR). He will be the NASA COTR for the ISN system development contract.

TUNS PROJECT MANAGER- The TUNS Project Manager will be responsible for day-to-day direction and coordination of the System Development Contractor (ISN), the Network/User Coordinator and the TU Policy and Orientation Coordinator. He will be responsible for all technical direction concerning system development and test. He will be responsible for periodic Project Status Reporting and Control.

(ISN) SYSTEM DEVELOPMENT PROGRAM MANAGER- The System Development Program Manager will be responsible for the overall system development. He will be responsible for insuring the appropriate resources are provided from the pool of ISN staff. He will be designated as key staff on the NASA TUNS development contract and will be responsible for negotiating contract agreements with NASA. He will be responsible for reporting periodic development status (dollar, manpower and technical) to NASA.

(ISN) SYSTEM DEVELOPMENT PROJECT MANAGER-The System Development Project Manager will be responsible for day-to-day direction and coordination of the ISN development staff. She will be responsible for all technical direction concerning system development, implementation, test and training. She will be responsible for the development of the required planning documents and maintaining detailed project status reporting.

(ISN) SENIOR SYSTEMS ANALYST- The Senior Systems Analyst will develop a TUNS system design to meet the user Functional Requirements Document Specifications. She will be responsible for developing the required technical documentation. She will be responsible for the system testing.

NETWORK/USER COORDINATOR- The Network/User Coordinator will be responsible for interfacing with the required central processing and network facility staff to insure technical compatibility and availability of the systems.

He will be responsible for acting as the executive coordinator for the User Working Group (UWG) insuring timely input, review, collation, interpretation and translation of user functional requirements information into system requirements. He will act as a focal point between the UWG Steering Committee Members, the UWG Specialists, the Systems Development Contractor and the Program/Project office staff.

TU POLICY AND ORIENTATION COORDINATOR- The TU Policy and Orientation Coordinator will be responsible for the timely identification and development of TU policy, procedure and standards documentation to be implemented in parallel with the TUNS system.

She will be responsible for the timely inventory of existing marketing and orientation materials, and the identification and specification of supplementary material in accordance with the TU five year plan. She will be responsible for insuring that the TUNS Training Plan meets the intent of the NASA policy and orientation requirements. She will insure that any on line training and orientation materials developed for the TUNS system meets the NASA requirements.

UWG STEERING COMMITTEE- The UWG Steering Committee will be responsible for review and approval of the user functional requirements developed by the UWG Specialists.

The steering committee will have a representative for each of the major functional automation areas represented by the system (NT-NEW TECHNOLOGY, IAC-INDUSTRIAL APPLICATION CENTER, USF- USER SUPPORT FACILITIES, APM/CCDS-APPLICATIONS PROJECT MANAGEMENT/CENTERS FOR COMMERCIALIZATION OF SPACE, PMUO- PROGRAM POLICY/MANAGEMENT AND USER ORIENTATION). It will also have a representative from the project office and the system development contractor. It will be chaired by the TUNS Program Manager. The Network/User Coordinator will be the Executive Recording Secretary for the Committee. The steering committee will meet semi-annually on a formal basis.

UWG SPECIALISTS- The individual UWG Specialists will be responsible for timely review, solicitation and coordination of other TU family member comments, draft and development of documentation related to their speciality areas of assignment as follows:

(NT) 1. FORMS/DOCUMENTS:-NTR (R. Chapman, G. Chapman)
-EVALUATION (Ruth Lizak)
-PUBS/TECH.BRIEF/SPINOFF (Leo Kluge, Walter Heiland)

2. CONTRACT ADMIN./TRACKING/SUPPORT DATABASES (Kathleen Hillard)
3. TUO REPORTING (John Richardson, Dean Glenn)

(IAC) 1. SEARCH (Robert Jack, Lynn Heer, Martin Zeller, Michael Goehring)
2. CUSTOMER SUPPORT (Michael Goehring, John Gibson, Lynn Heer)
3. IAC REPORTING (Lynn Heer)
4. BOEING INTERFACE (Bill Fedore)

(USF) 1. E-MAIL/CALENDAR/BULLETIN BOARD/COMMUNICATIONS/ CONFERENCING
(G. Chapman, Maylene Decanay, Walter Heiland)
2. WHO AND WHERE DIRECTORIES (Maylene Decanay, Walter Goldenrath)
3. NOTEPADS (INQUIRY, BENEFITS, TECHNICAL) (Walter Goldenrath,
Gordon Chapman) Maury Levinson)

(APM/CCDS)1. APPLICATIONS PROJECT MANAGEMENT (Ray Whitten)
2. TAT INTERFACE (Doris Rouse)
3. CCDS INTERFACE (Bill Oran)

(PMUO) 1.HQTRS. REPORTING (TU/IAC PERFORMANCE/BENEFITS) (Richard Chapman, Lani Hummel)

2.POLICY/MGT PLANNING/BUDGETING (Lani Hummel)

3.ORIENTATION/TRAINING (Kathleen Hillard, John Gibson, Michael Goehring, Dean Glenn)

The UWG members will be responsible for providing effort on the following tasks:

FRD Tasks-

Verify menu tree (major user functions)
Generic functional descriptions
Data Dictionary - field name, length, type, edit criteria, estimated volume
Screen layout verification
Report formats, frequency requirements
Forms identification and definition

User Manual Tasks-

Assist in drafting detailed policy, procedures and standards

Data Conversion/Entry & Test Tasks-

Provide information for Implementation/Conversion Plan
Participate in site testing/data conversion

S/W-HDW Inventory/Augmentation Tasks-

Provide inventory information
Augment hardware/software

Training/Orientation Tasks-

Provide information for materials selection and development
Participate in training

In order to assist the UWG Specialists in accomplishing their tasks in a timely manner, the Network/User Coordinator will issue specific tasks and milestone due dates for work to be accomplished.

3.3 PROJECT TEAM MEMBERS

FUNCTION	TEAM MEMBER NAME	ORGANIZATION
Director, Tech. Until.	Henry Clarks	NASA HQTRS CODE IU
TUNS Program Manager & UWG Str.Commit.Chair.	Royal Bivins	NASA HQTRS CODE IU
TUNS Project Manager & UWG Str.Commit.Member	Leon Lopatin	NASA HQTRS CODE IU
Sys.Dev.Program Mgr.	Tom Judkins	ISN
Sys.Dev.Project Mgr. & UWG Str.Commit.Member	Elaine McCarty	ISN
Sr.System Analyst	Elizabeth Jones	ISN
Net/User Coordinator & UWG Str.Commit.ERSec.	Christopher Fuhs	TAI
TU Policy&Orient.Coordr. &UWG Str.Commit.-PMUO	Peggy McDonald	W.T.Chen
UWG Str.Commit.-NT	Richard Chapman	W.T.Chen
UWG Str.Commit.-IAC	Lynn Heer	Fla. IAC
UWG Str.Commit.-USF	Gordon Chapman	JPL TUO
UWG Str.Commit.-APM	Ray Whitten	NASA HQTRS CODE IU
UWG Specialist	Ruth Lizak	SRI
UWG Specialist	Leo Kluger	ABP
UWG Specialist	Kathleen Hillard	LaRC TUO Ofc.
UWG Specialist	John Richardson	MSFC TUO Ofc.
UWG Specialist	Robert Jack	RMS STIF TU Ofc.
UWG Specialist	Walter Heiland	RMS STIF TU Ofc.
UWG Specialist	Martin Zeller	USC IAC
UWG Specialist	Michael Goehring	IND. IAC
UWG Specialist	John Gibson	COSMIC
UWG Specialist	Walter Goldenrath	ARC TU Counselor
UWG Specialist	Doris Rouse	RTI
UWG Specialist	Lani Hummel	W.T.Chen
UWG Specialist	Bill Oran	NASA HQTRS CODE IC
UWG Specialist	Bill Fedore	Boeing
UWG Specialist	Maylene Dacanay	AMES
UWG Specialist	Maury Levenson	GSFC
UWG Specialist	Dean Glenn	JSC

3.4 PROJECT REPORTING AND CONTROL

In order to successfully develop the TUNS system using the development team as outlined above, it is necessary to have open communications between team members. To accomplish the level of open communication necessary the following planning and reporting procedures will be implemented by the TUNS Project Manager:

- Approved TUNS Planning Documents will be distributed to all TU team member sites;

- The TUNS Project Manager will hold status meetings every two weeks with the key team coordinators (a meeting calendar will be published);

- The TUNS Project Manager will distribute a written monthly status report to all development team members;

- The development team members will provide a monthly status report on their activities during the reporting period. This report to the TUNS Project Manager will be due one week prior to release of the monthly project status report;

- All development team members will be given an access number to the TUNS E-Mail System to enable them to communicate to their team members and to the Project Office.

- The TUNS Project Manager will be responsible for resources control. All support contractors will submit 533 Financial Status reports on a periodic basis. The TU team sites will be responsible for submitting an initial hardware and software inventory and periodic updates to the inventory;

- The TUNS Project Office will use a PC based automated project management system to maintain control of the project.

SECTION 4.0
IMPLEMENTATION SCHEDULES

4.1 MASTER MILESTONE SCHEDULE

Figure 2.0 (SYSTEM DEVELOPMENT MASTER MILESTONE SCHEDULE) is the approved development schedule. All other schedules will be based on this schedule. Updates to the schedule will be presented as part of the monthly project status report.

4.2 DETAILED TASK PHASING AND DEFINITIONS

Attachment "A" details the task breakdowns and definitions.

4.3 PROJECT SCHEDULE GANTT CHARTS

Attachment "B" is the project schedule gantt charts. Those will be organized by major developmental activity. Updates to the charts will be presented as part of the monthly project status report.

4.4 PROJECT PERT NETWORK CHART

Attachment "C" is the project pert network chart.

SCHEDULE GANT CHART

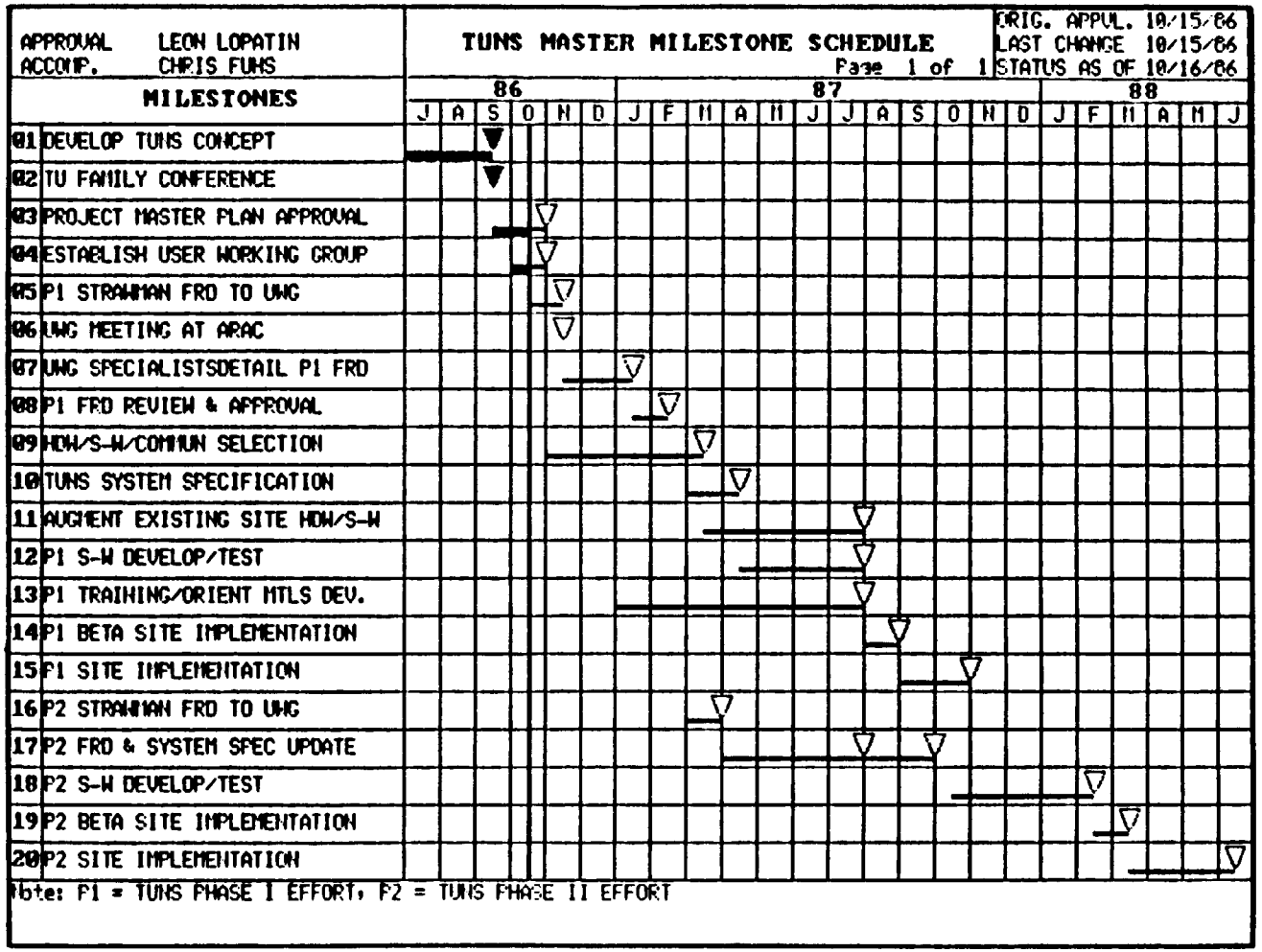
APPROVAL LEON LOPATIN
ACCOMP. CHRIS FUHS
TUNS MASTER MILESTONE SCHEDULE
Page 1 of 1
ORIG. APPVL. 10/15/86
LAST CHANGE 10/15/86
STATUS AS OF 10/16/86
MILESTONES
86
87
88
J A S O N D J F M A M J J A S O N D J F M A M J
01 DEVELOP TUNS CONCEPT
02 TU FAMILY CONFERENCE
03 PROJECT MASTER PLAN APPROVAL
04 ESTABLISH USER WORKING GROUP
05 P1 STRAWMAN FRD TO UWG
06 UWG MEETING AT ARAC
07 UWG SPECIALISTSDETAIL P1 FRD
08 P1 FRD REVIEW & APPROVAL
09 HDW/S-W/COMMUN SELECTION
10 TUNS SYSTEM SPECIFICATION
11 AUGMENT EXISTING SITE HDW/S-W
12 P1 S-W DEVELOP/TEST
13 P1 TRAINING/ORIENT MTLS DEV.
14 P1 BETA SITE IMPLEMENTATION
15 P1 SITE IMPLEMENTATION
16 P2 STRAWMAN FRD TO UWG
17 P2 FRD & SYSTEM SPEC UPDATE
18 P2 S-W DEVELOP/TEST
19 P2 BETA SITE IMPLEMENTATION
20 P2 SITE IMPLEMENTATION
Note: P1 = TUNS PHASE I EFFORT, P2 = TUNS PHASE II EFFORT

FIGURE 2.0 (SYSTEM DEVELOPMENT MASTER MILESTONE SCHEDULE)

SECTION 5.0
RESOURCES REQUIREMENTS

The TUNS Project is a major system development and implementation effort. As such, it will require the close coordination of many individuals and organizations. TUNS will also require the acquisition of non-personnel resources. This section of the Project Master Plan identifies and estimates the resources needed to ensure a timely and effective completion of the project tasks.

This section has been broken down by organization to simplify further planning and budget analysis. These estimates will be tracked against and updated via the periodic project status reports.

5.1 CIVIL SERVICE

The personnel resources required to develop the TUNS system over the next two years consists of the following:

NASA Headquarters Code I & Ctr. TUO:

Code IU Management	1 x 2080 x 5% x 2 =	208 mhrs
TUNS Program Manager	1 x 2080 x 20% x 2 =	832 mhrs
TUNS Project Manager	1 x 2080 x 70% x 2 =	2912 mhrs
Administrative Support	1 x 2080 x 10% x 2 =	416 mhrs
User Working Group members	4 x 2080 x 5% x 2 =	832 mhrs *

TOTAL ESTIMATED CIVIL SERVICE MANPOWER		5200 mhrs

* Not charged directly to this project development.

5.2 CONTRACTOR

The Contractor resources to develop the TUNS system over the next two years will be procured under NASA task type contracts. The following Contractor effort is estimated to be required:

1. Information Systems and Networks (ISN) Corporation - TUNS Systems Development, implementation and training Contractor. The total number of hours estimated for ISN is:

   26,961 mhrs

   Detailed estimates are at Attachment "D".

2. W.T. Chen Company and associated Consultants - Policy development/coordination, TU orientation, new technology and management support Contractor (not charged directly to this project development). The total number of hours estimated for W.T.Chen is:

   policy/orientation/mgt.- 1 x 2080 x 30% x 2 = 1,248 mhrs
   new technology- 1 x 2080 x 30% x 2 = 1,248 mhrs
   Total 2,496 mhrs

3. IAC and other TU Support Contractors - User Working Group participants (not charged directly to this project development). The total number of hours estimated for this group is:

   user working group - 11 x 2080 x 5% x 2 = 2,288 mhrs
   user working group/network-central processor coordination - 1 x 2080 x 80% x 2 = 3,328 mhrs
   Total 5,616 mhrs

4. NASA Support Contractors - Central processing services, Network/ Communication services, and site training services (not charged directly to this project development). The total number of hours estimated for this effort is:

1x 2080 x100% x 2 = 4,160 mhrs

TOTAL ESTIMATED CONTRACTOR MANPOWER FOR TUNS DEVELOPMENT IS:

39,233 mhrs

5.3 TUNS UNIQUE EQUIPMENT/SOFTWARE

The following TUNS unique equipment and software will be required for successful completion of the project development within the two year period (these items will be funded by the Code IU TUNS project office):

USER/USE	LOCATION	TYPE	QTY	EST.K$s
WORK STATION-				
TUNS PROGRAM MANAGER	(HQTRS)	AT/COMP	1	$9K
TUNS PROJECT MANAGER	(HQTRS)	AT/COMP	1	$9k
TUNS UWG COORDINATOR	(HQTRS)	AT/COMP	1	$9K
ISN PROG/PROJ MGRS	(ISN)	AT/COMP	1	$9K
S/W DEVELOPMENT	(ISN)	AT/COMP	2	$18K
TRAINING	(ISN)	AT/COMP	1	$9K
			TOTAL	$63K

CENTRAL SERVICES -

LOCAL AREA NETWORK (for development)	(TBD)	(TBD)	1	$22K
CENTRAL PROCESSOR	(TBD)	(TBD)	1	$50K
FRONT END COMM SERV.	(TBD)	(TBD)	1	$15K
DBMS (CNTRL.PROCESSOR)	(TBD)	(TBD)	1	$15K
DBMS (SITE LICENSES)	(SITES)	(TBD)	?	? *
SITE NETWORK SERVER	(SITES)	(TBD)	?	? *
			TOTAL	$102K+

* SITE FUNDED (MULTIPLE WORK STA. SITES)

5.4 NETWORK/CENTRAL PROCESSING SERVICES

Development and implementation of the TUNS system will require the services of a central processing/networking system. During the early stages of the development, ISN will perform a trade-off study to recommend to NASA the best solution for TUNS. The approved solution will be implemented in phases as required.

5.5 FISCAL YEAR PROJECT FUNDING

The following is a fiscal year summary of the TUNS project funding required to complete the system development and implementation within the two year period:

	(K$s)			
	FY1986	FY1987	FY1988	TOTAL
SYS.DEV.CONTRACTOR (ISN)-	64,000	562,000	493,000	1,119,000
UWG/MISC. SUPPORT-(CHEN/TAI)	32,000	90,000	60,000	182,000
PROJECT DEV. WORK STATIONS-	9,000	54,000	0	63,000
CENTRAL PROCESSING/NETWORK-	0	22,000	80,000	102,000
TOTAL $'s	105,000	728,000	633,000	1,466,000

SECTION 6.0
SYSTEM DOCUMENTATION REQUIREMENTS

Documents prepared by the System Development Contractor (ISN), will be developed using the following steps:

a. Outline drafted by ISN and approved by the TUNS project manager.
b. Draft prepared by ISN.
c. Review and suggested revisions by the TUNS project office and appropriate staff.
d. Final and updates prepared by ISN.
e. Distribution by ISN.

6.1 PROJECT PLANNING DOCUMENTATION

The following Planning documents will be developed by ISN:

a. TUNS Project Master Plan (PMP)- The purpose for this plan is stated in Section 1.3.

b. TUNS Test Plan (TP)- The purpose of the TP is to ensure that any system implemented meets the functional requirements specified.

c. TUNS Implementation Plan (IP)- The purpose of the IP is to ensure that the implementation of TUNS proceeds smoothly at all sites. The IP will include a Data Conversion Plan (DCP) for all sites which will require data to be converted from existing automated systems to the TUNS system. It will also include a Training Plan (TP) which will outline how, when and where training will take place.

6.2 USER AND TECHNICAL DOCUMENTATION

Five User and Technical documents will be prepared in general accord with FIPS Pub. 38. during the development of TUNS:

a. Functional Requirements Document (FRD)- The FRD will be prepared by the User Working Group. It will define the functions which TUNS will be required to perform.

b. Software/hardware/network/communications selection report- This report will be prepared by ISN. It will recommend for NASA approval the software, hardware, network/communications configuration best suited for the TUNS development and implementation. ISN will draft selection criteria for NASA approval prior to beginning the study. The criteria will take into consideration technical and resource considerations.

c. System Specification (SS)- The SS will be prepared by ISN. It will describe the design goals, the overall system flow, and the database structure used in TUNS. It will also include programming standards to be used in developing TUNS application software. The programming standards will be such that the resulting code is self-documenting on a program-by-program basis.

d. User Manual (UM)- The UM will provide detailed instructions in the use of the TUNS system. The users manual will be in addition to the computer-based training and help features provided in the TUNS package.

e. System Configuration/Maintenance Manual (CMM)- The CMM will record the TUNS configuration installed at each site. This will include such information as whether the site is using a local area network and, if so, the type of network; the disk configuration and references; any customizations in the menus for the site, etc. Such a record is necessary in order to support the user community in case problems or misunderstandings in the use of the software occur. The document will also include information for the system administrators (local sites and central site) to maintain, operate and update the TUNS system.

SECTION 7.0
SYSTEM TRAINING REQUIREMENTS

7.1 CLASSROOM TRAINING REQUIREMENTS

The classroom training provided for TUNS will be kept to a minimum. It will consist of three components: training in the application software, training in system administration, and training in the use of the computer-based training software. Major initial training will be done on a regional basis. A key training individual for each site will be trained at the regional training classes. These key individuals will be responsible for the training individuals at their specific site. Since most sites have micro computer institutional help/training offices in operation, these facilities will be requested to handle the long term training requirements for the TUNS system.

7.2 PC-BASED TRAINING REQUIREMENTS

TUNS will include PC-based training for all of the off-the-shelf packages contained within the system. Wherever possible, commercially available packages will be used. The PC-based training will also include remedial training in the use of the TUNS application software. The orientation training described in the following section will also be provided through the use of PC-based training.

7.3 ORIENTATION MATERIAL REQUIREMENTS

Several types of orientation programs will be available in the TUNS system. The orientation programs will include orientation for TUO staff (whether new or temporary staff), for IAC staff (again, whether new, old or temporary), for new government technical representatives/monitors for contracts and grants (to introduce them to the reporting requirements and to the NASA TU policies and procedures), and for contractor and civil service personnel responsible for new technology reporting.

SECTION 8.0
MAJOR ASSUMPTIONS/IMPACT

8.1 MAJOR ASSUMPTIONS

The above plans and estimates are based on the following major assumptions:

NO MAJOR CHANGES TO CONCEPT MODEL AUTOMATION FUNCTIONS. USE OF THE EXISTING HARDWARE/SOFTWARE TO THE GREATEST EXTENT POSSIBLE DURING SYSTEM DESIGN AND DEVELOPMENT

TUNS PROJECT OFFICE PROVIDES MAJOR FUNDING FOR DEVELOPMENT, IMPLEMENTATION, INITIAL TRAINING AND PROJECT UNIQUE HARDWARE/SOFTWARE

SITES PROVIDE FUNDING FOR THEIR SITE AUGMENTATION OF EXISTING WORK STATION HARDWARE/SOFTWARE TO MEET TUNS REQUIREMENTS

TUNS PROCESSING REQUIREMENTS LIMITED TO HIGH PRIORITY ITEMS TO AVOID MAJOR IMPACT ON EXISTING STAFFING LEVELS TRAINING TO BE PERFORMED ON A REGIONAL BASIS.

8.2 AWARENESS OF SYSTEM IMPACT

The ability to develop and operate a successful automation system is based on technical skill, existing computer and software technology, project management skills and an awareness of the human engineering factors involved in system design and implementation. Each of the above ingredients is important, but without proper human engineering a system will not be successful.

Today's automation technology is changing at such a rapid pace that it is difficult for many people to cope with the installation of a new system. For some members of the TU Program team moving from some automation (eg., online bibliographic searches, word processor, batch processed management information reports, etc.) to a multi-functional online professional work station will not be too traumatic.

But for some, who are moving directly from no personal computing experience to even partial use of the new terminals, it will be an awkward and frustrating experience.

The TUNS system development team is aware of this situation and will do everything possible to make the system easy to use, flexible to allow for different levels of skills, and the use or non-use of the system by different staff members. The system will not be a paperless system. Managers will still have to manage, administrative staff will have to administer programs, and operations and technical staff will have to make technical judgements. It is fully acceptable to have different users use the terminal in different ways and with different frequency. Some staff may choose to direct someone else to retrieve information using the terminal or some staff may elect to use it themselves. Proper training and patience on the part of the TU staff will lead to a successful implementation.

With the implementation of this system, most people will have to learn new skills. Some people will have to reallocate part of their time to system administration. A few new jobs will be created for overall system operation and administration. The entire staff will be more productive in performing its professional tasks because the automation system will perform the more repetative functions. The use of new work tools such as automatic correspondence generation, electronic data transmission, automatic report generation and other automation tools will assist the staff in doing its everyday work functions. Successful implementation of the new system will be made possible with the coordinated help and effort of the TU Program members.

ATTACHMENT A

DETAILED TASK PHASING AND DEFINITIONS

MAJOR STAGES OF TUNS DEVELOPMENT

1. CONCEPT DEVELOPMENT.

In order to establish a frame of reference for the presentation of an automated Technology Utilization Network to the TU family, a concept demonstration model was developed. Existing studies on New Technology and NASA TU automation requirements were reviewed. Using information gained from these studies and analysis of existing automated TU systems, a PC-based demonstration model was developed. This model was presented at the TU Family Conference held September 22-24, 1986.

2. FUNCTIONAL DEFINITION - PHASE I.

The functional requirements of the TUNS system will be performed by NASA Headquarters, TU Users Working Group (UWG) members, and support contractors. The UWG will be established from members of the TU family and will consist of a Steering Committee, Functional Coordinators, and Functional Specialists.

A "strawman" Functional Requirements Document will be prepared which defines the TUNS Concept Model as presented at the TU Family Conference. Using this document as a baseline, the UWG will query the members of the TU family in order to define the precise requirements of the TUNS system. The requirements contained in this document will include detailed definition of those items to be completed in Phase I and a concept definition of those items scheduled for development in Phase II.

In conjunction with the requirements definition process, analysis will be performed on the computer hardware and software required for the TUNS system as well as what equipment and software is currently in use in the NASA TU offices.

3. PHASE I SYSTEM DEVELOPMENT AND TESTING.

The Functional Requirements Document developed in item 2 above will be used to design the TUNS system - Phase I. Upon approval of the design by the NASA HQ, the system will be developed using a combination of off-the-shelf office automation software and application software created by the system development contractor. System documentation,

training materials, test and implementation plans, and training plans will also be prepared.

Upon completion of the development of the TUNS system, a system acceptance test will be conducted in accordance with the system test plan. Upon NASA approval of the acceptance test, a beta test will be performed at a pre-defined location. The system acceptance test will be repeated at the beta site and modifications made as required.

4. PHASE I IMPLEMENTATION.

The Phase I of the TUNS system will be distributed to the TU family on a regional basis. Representatives from the TU offices, IACs, CCDSs, and TU counselors located in that region will meet at a central point to receive training in the installation and use of the TUNS system (Phase I).

5. PHASE I MAINTENANCE.

A "hot-line" will be available for the TU family to report problems occurring in their use of the TUNS system. The solutions to these problems will be distributed to the TU family if such a problem is not unique to the particular installation.

6. PHASE II FUNCTIONAL DEFINITION.

A "strawman" requirements document will be prepared for use by the UWG in the definition of those items scheduled for completion during Phase II. As in Phase I, the UWG will survey the TU family in order to obtain specific needs of the users. The UWG will prepare the draft requirements document following the outline of the "strawman" and will submit it to the UWG steering committee and NASA HQ for review.

7. PHASE II DEVELOPMENT AND TESTING.

As in Phase I, the Functional Requirements Document developed in item 6 above will be used to design the TUNS system - Phase II. Upon approval of the design by the NASA HQ, the system will be developed using a combination of off-the-shelf office automation software and application software created by the system development contractor. System documentation, training materials, test and implementation plans, and training plans will also be prepared.

Upon completion of the development of the TUNS system, a system acceptance test will be conducted in accordance with the system test plan. Upon NASA approval of the acceptance test, a beta test will be performed at a pre-

defined location. The system acceptance test will be repeated at the beta site and modifications made as required.

8. PHASE II IMPLEMENTATION.

The Phase II of the TUNS system will be distributed to the TU family on a regional basis. Representatives from the TU offices, IACs, CCDSs, and TU counselors located in that region will meet at a central point to receive training in the installation and use of the TUNS system (Phase II).

9. TUNS MAINTENANCE.

A "hot-line" will be available for the TU family to report problems occurring in their use of the TUNS system. The solutions to these problems will be distributed to the TU family if such a problem is not unique to the particular installation. This "hot-line" will be used to report problems on both Phase I and II software.

TUNS MENU STRUCTURE

10/21/86

INITIAL MENU

1.	Office Automation User Support	(Screen 1)
2.	Office Automation General Support	(Screen 2)
3.	New Technology	(Screen 3)
4.	IAC Customer Support	(Screen 4)
5.	TU Program/Project Management	(Screen 5)
6.	On-Line Training	(Screen 6)
7.	System Administration	(Screen 7)

OFFICE AUTOMATION USER SUPPORT

1

1.	TU Electronic Mail * tu mail directory	(Phase I)
2.	Personal Calendar	(Phase I)
3.	Office Calendar	(Phase I)
4.	TU Bulletin Board	(Phase II)
5.	Who and Where Directories	(Screen 1.5)
6.	Notepads	(Phase II)

* high — low/optional

WHO AND WHERE DIRECTORIES

1.5

1.	TU Team Members	(Screen 1.5.1)
2.	Expert Referral Listing	(Phase II)
3.	Online Database	(Phase II)
4.	Application Projects	(Phase II)
5.	Marketing/Training Materials	(Phase II)

TU TEAM MEMBERS

1.5.1

1.	Browse Team Member List	(Phase II)
2.	Update Team Members	(Phase II)

OFFICE AUTOMATION GENERAL SUPPORT

2

1.	Communications	(Phase I)
2.	Conferencing	(Phase II)
3.	Word Processing	(Phase I)
4.	Database	(Phase I)
5.	Spreadsheet	(Phase I)
6.	Graphics	(Phase I)

NEW TECHNOLOGY

3

1.	Forms	(Screen 3.1)
2.	Contract Administration	(Screen 3.2)
3.	Tracking	(Screen 3.3)
4.	Reporting	(Screen 3.4)
5.	Supporting Databases	(Screen 3.5)

FORMS

3.1

1.	New Technology Report	(Screen 3.1.1)
2.	Tech Brief	(Screen 3.1.2)
3.	Tech Support Package	(Phase I)
4.	Spinoff Article	(Phase I)

NEW TECHNOLOGY REPORT

3.1.1

1.	Browse NTR Index	(Phase I)
2.	Key Word Search of Title	(Phase I)
3.	Key Word Search of Text	(Phase I)
4.	Update NTR Items	(Phase I)
5.	Print NTR Items	(Phase I)
6.	Transmit/Receive NTR Item	(Phase II)
7.	Mark for Archiving	(Phase I)
8.	Delete NTR Item	(Phase I)

TECH BRIEF

3.1.2

1.	Browse NTR Index	(Phase I)
2.	Update Tech Brief	(Phase I)
3.	Transmit Tech Brief to LTS	(Phase II)
4.	Transmit Tech Brief to STIF	(Phase II)

CONTRACT ADMINISTRATION

3.2

1.	Browse Active Contract/Grant Index	(Phase I)
2.	Update Contracts/Grants	(Phase I)
3.	Contract Correspondence	(Screen 3.2.4)
4.	Mark Contracts/Grants for Archiving	(Phase I)
5.	Delete Contract/Grant	(Phase I)

CONTRACT CORRESPONDENCE

3.2.4

1.	Generate Standard Correspondence	(Phase I)
2.	Update Correspondence Status	(Phase I)
3.	Create Letter not in Std. Library	(Phase I)

TRACKING

3.3

1.	Browse NTR Index	(Phase I)
2.	Update NTR Tracking Information	(Phase I)
3.	Print NTR Tracking Information	(Phase I)

REPORTING

3.4

1.	Headquarters Contract Reports	(Phase I/II)
2.	TUO Contract Reports	(Phase I/II)
3.	Backlog of Items at SRI	(Phase I/II)
4.	Backlog of Items at LTS	(Phase I/II)
5.	Award Status	(Phase I/II)
6.	Patent Status	(Phase I/II)
7.	Statistical Reports	(Phase I/II)
8.	NTR History Report	(Phase I/II)
9.	Other Milestone Reports	(Phase I/II)

Note: Key reports only will be included in Phase I

SUPPORTING DATABASES

3.5

1.	Contractors	(Screen 3.5.1)
2.	Innovators	(Screen 3.5.2)

CONTRACTORS

3.5.1

1.	Browse Contractors	(Phase I)
2.	Update Contractor Information	(Phase I)
3.	Print Contractor Information	(Phase I)
4.	Mark Contractor for Archiving	(Phase I)
5.	Delete Contractor	(Phase I)

INNOVATORS

3.5.2

1.	Browse Innovators	(Phase I)
2.	Update Innovator Information	(Phase I)
3.	Print Innovator Information	(Phase I)
4.	Mark Innovator for Archiving	(Phase I)
5.	Delete Innovator	(Phase I)

IAC CUSTOMER SUPPORT

4

1.	Online Searching	(Screen 4.1)
2.	Sort-Aid	(Phase I)
3.	Expert Problem Referral	(Phase II)
4.	Marketing	(Phase II)
5.	Customer Request Tracking	(Phase II)
6.	Generate Cust. Corresp/Follow-up	(Phase II)
7.	Prepare Cost Proposals	(Phase II)
8.	Prepare Purchase Orders	(Phase II)
9.	Prepare Customer Product	(Phase II)
10.	Order and Distribute Documents	(Phase II)
11.	Invoicing	(Phase II)
12.	Generate Management Reports	(Phase II)

ONLINE SEARCHING

4.1

1.	Through Gateway	(Phase I)
2.	Direct Dial	(Phase I)

TU PROGRAM/PROJECT MANAGEMENT

5

1.	Application Project Management	(Phase II)
2.	Budget Preparation/Transmit/Receive	(Phase II)
3.	Generate HQ Management Reports	(Phase II)
4.	Generate TUO Management Reports	(Phase II)
5.	Generate IAC Management Reports	(Phase II)

ONLINE TRAINING

6

1.	TU Program Orientation	(Phase I/II)
2.	TUNS System Training	(Phase I/II)
3.	IAC Customer Support Orientation	(Phase II)
4.	Office Automation Orientation	(Screen 6.4)

OFFICE AUTOMATION ORIENTATION

6.4

1.	Word Processing	(Phase I)
2.	Spreadsheets	(Phase I)
3.	Database	(Phase I)
4.	Graphics	(Phase I)
5.	Communications	(Phase I)
6.	Electronic Mail	(Phase I/II)
7.	Calendars	(Phase I/II)
8.	Bulletin Board	(Phase II)

SYSTEM ADMINISTRATION

7

1.	TUNS System Backup	(Phase I)
2.	Menu Maintenance	(Screen 7.2)
3.	Password Maintenance	(Screen 7.3)
4.	Help System Maintenance	(Phase I/II)
5.	Corresp. Std. Library Maintenance	(Phase I)
6.	Set System Parameters	(Phase I/II)
7.	Pack Database	(Phase I)
8.	Retrieve Archival	(Phase I)
9.	Archive	(Phase I)

MENU MAINTENANCE

7.2

1.	Browse Menu Selections	(Phase I)
2.	Update Menu Selections	(Phase I)
3.	Print Menu Selections	(Phase I)
4.	Delete Menu Selections	(Phase I)

PASSWORD MAINTENANCE

7.3

1.	Browse User Ids	(Phase I)
2.	Update User Ids	(Phase I)
3.	Delete User Ids	(Phase I)

CENTER RELEASE FORM

NASA Miscellaneous Publications

(1) INSTRUCTIONS:

- o Block 2 has been completed with available information.
- o Complete Block 3 if there are NO Restrictions on the document and it can be distributed to the public

OR

- o Complete Block 4 if there are any limitations and the document is only available either FROM a specific office or TO a specific audience (i.e. US Goverment Agencies only...).
- o Return the completed form to: NASA CASI, Attn: ACQUISITIONS, 800 Elkridge Landing Rd., Linthicum Heights, MD 21090-2934 OR fax form to (301)-621-0134 (Acquisitions Dept).

(2)

Title: Technology Utilization Network System (TUNS) Documents **

Author: Information Systems and Networks Corporation (ISN)

Originating NASA Organization: NASA Headquarters, Code CU

Report Number: Contract # NASW-4164

Publication Date: 1986-1989

** This will release ALL documents during the period named related to TUNS

(3)

/ X / PUBLICLY AVAILABLE

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Signature Date

(4)

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